

CLAIMS

What is claimed is:

1. A computerized method comprising:
receiving a user request;
identifying a plurality of Web Services to be performed according to the user request; and
generating, from the plurality of Web Services, a Web Service composition expressed in a business process modeling language incorporating exception handling.
2. The method of claim 1 further comprising:
executing the expressed Web Service composition in a business process modeling language execution engine.
3. The method of claim 1 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).
4. The method of claim 1 wherein the plurality of Web Services is provided by a plurality of devices.
5. The method of claim 1 wherein the plurality of Web Services is provided by a plurality of web sites.

6. The method of claim 1 further comprising:
determining constraints and preferences associated with the user request.
7. The method of claim 1 wherein the expressed composite Web Service is generated using automated planning.
8. The method of claim 1 wherein generating the composite Web Service expressed in the business process modeling language comprises:
developing a planning domain associated with the business process modeling language;
creating a plan based on a specification of the planning domain; and
translating the plan into the Web Service composition expressed in the business process modeling language.
9. The method of claim 1 wherein generating the composite Web Service expressed in the business process modeling language comprises:
developing an abstract service domain (ASD);
generating a first plan based on a specification of the ASD;
translating the first plan into a second plan created based on a specification of a second domain associated with the business process modeling language; and
translating the second plan into the Web Service composition expressed in the business process modeling language.

10. The method of claim 9 wherein the ASD is developed based on input of a domain expert.

11. The method of claim 9 wherein the first plan is generated using a hierarchical task network (HTN) planner.

12. The method of claim 1 wherein generating the composite Web Service expressed in the business process modeling language comprises:

developing an abstract service domain (ASD);

converting the ASD to a second domain associated with the business process modeling language;

obtaining a plan based on a specification of the second domain; and

translating the plan into the Web Service composition expressed in the business process modeling language.

13. An apparatus comprising:

a request receiver to receive a user request;

a plan generator to identify a plurality of Web Services to be performed according to the user request; and

a translator to generate, from the plurality of Web Services, a Web Service composition expressed in a business process modeling language incorporating exception handling.

14. The apparatus of claim 13 further comprising a business process modeling language execution engine to execute the expressed Web Service composition.

15. The apparatus of claim 13 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

16. The apparatus of claim 13 wherein the plurality of Web Services is provided by a plurality of devices.

17. The apparatus of claim 13 wherein the plurality of Web Services is provided by a plurality of web sites.

18. The apparatus of claim 13 wherein the request receiver is to determine constraints and preferences associated with the user request.

19. The apparatus of claim 13 wherein the expressed composite Web Service is generated using automated planning.

20. The apparatus of claim 13 wherein the translator is to generate the composite Web Service expressed in the business process modeling language by developing a planning domain associated with the business process modeling

language, creating a plan based on a specification of the planning domain, and translating the plan into the Web Service composition expressed in the business process modeling language.

21. The apparatus of claim 13 wherein the translator is to generate the composite Web Service expressed in the business process modeling language by developing an abstract service domain (ASD), generating a first plan based on a specification of the ASD, translating the first plan into a second plan created based on a specification of a second domain associated with the business process modeling language, and translating the second plan into the Web Service composition expressed in the business process modeling language.

22. The apparatus of claim 21 wherein the ASD is developed based on input of a domain expert.

23. The apparatus of claim 21 wherein the first plan is generated using a hierarchical task network (HTN) planner.

24. The apparatus of claim 13 wherein the translator is to generate the composite Web Service expressed in the business process modeling language by developing an abstract service domain (ASD), converting the ASD to a second domain associated with the business process modeling language, obtaining a plan based on a specification of the second domain, and translating the plan into the Web Service composition expressed in the business process modeling language.

25. An apparatus comprising:
means for receiving a user request;
means for identifying a plurality of Web Services to be performed according to the user request; and
means for generating, from the plurality of Web Services, a Web Service composition expressed in a business process modeling language incorporating exception handling.

26. The apparatus of claim 25 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS) and a Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

27. The apparatus of claim 25 wherein the plurality of Web Services is provided by a plurality of devices.

28. The apparatus of claim 25 wherein the plurality of Web Services is provided by a plurality of web sites.

29. A machine readable medium having stored thereon data representing sequences of instructions, which when executed by a computer system, cause said computer system to perform a method comprising:
receiving a user request;

identifying a plurality of Web Services to be performed according to the user request; and

generating, from the plurality of Web Services, a Web Service composition expressed in a business process modeling language incorporating exception handling.

30. The machine readable medium of claim 29 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS), Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

31. The machine readable medium of claim 29 wherein the plurality of Web Services is provided by a plurality of devices.

32. The machine readable medium of claim 29 wherein the plurality of Web Services is provided by a plurality of web sites.

33. A system comprising:
a memory; and
at least one processor coupled to the memory, the at least one processor executing a set of instructions which cause the at least one processor to
receive a user request,
identify a plurality of Web Services to be performed according to the user request, and

generate, from the plurality of Web Services, a Web Service composition expressed in a business process modeling language incorporating exception handling.

34. The system of claim 33 wherein the business process modeling language incorporating exception handling is any one of Business Process Execution Language for Web Services (BPEL4WS) and Business Process Modeling Language (BPML), and Web Service Choreography Interface (WSCI).

35. The system of claim 33 wherein the plurality of Web Services is provided by a plurality of devices.

36. The system of claim 33 wherein the plurality of Web Services is provided by a plurality of web sites.